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32074 7590 01/23/2008 INTERNATIONAL BUSINESS MACHINES CORPORATION DEPT. 18G BLDG. 300-482 2070 ROUTE 52 HOPEWELL JUNCTION, NY 12533			EXAMINER PATEL, ISHWARBHAI B	
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

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**BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES**

Application Number: 09/759,018  
Filing Date: January 12, 2001  
Appellant(s): KLINE, ERIC VANCE

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Ira D. Blecker  
For Appellant

**MAILED**  
JAN 23 2008  
**GROUP 2800**

**EXAMINER'S ANSWER**

This is in response to the appeal brief filed May 4, 2007 appealing from the Office action mailed October 31, 2006.

**(1) Real Party in Interest**

A statement identifying by name the real party in interest is contained in the brief.

**(2) Related Appeals and Interferences**

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

**(3) Status of Claims**

The statement of the status of claims contained in the brief is correct.

**(4) Status of Amendments After Final**

No amendment after final has been filed.

**(5) Summary of Claimed Subject Matter**

The summary of claimed subject matter contained in the brief is correct.

**(7) Claims Appendix**

The copy of the appealed claims contained in the Appendix to the brief is correct.

**(8) Evidence Relied Upon**

4,030,948	Berger	6-1977
6,700,209	Raiser et al.	3-2004
5,973,930	Ikeda et al.	10-1999

**(9) Grounds of Rejection**

The following ground(s) of rejection are applicable to the appealed claims:

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 4 and 5 are rejected under 35 U.S.C. 102(b) as being anticipated by Berger, (US Patent No. 4,030,948).

**Regarding claim 4**, Berger discloses an electronic device having an integrated circuit (semiconductor element 10, figure 1 and 2) with a composition, said composition comprising: a matrix material (composition, column 4, line 34-35); a polymer which serves as an insoluble and an immobile phase in said matrix material (polyimide particles in the composition are immobile in said composition as the composition is stable with those particles in the composition); and a chelating agent (amines, described in detail on column 5, line 1 to column 8, line 33) which is bonded to said insoluble and immobile phase (as the composition exist as a single material in stable condition, which

can be used as a coating material, column 4, line 35-40, all the elements thereof are bonded together).

**Regarding claim 5**, Berger further discloses said composition is a scratch coat (34, figure 1 and 2) covering an active surface of said integrated circuit.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 4-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Raiser (US Patent No. 6,700,209) in view of Berger, (US Patent No. 4,030,948).

**Regarding claim 4**, Raiser in figure 1 discloses an electronic device having an integrated circuit (12), mounted on substrate 12, along with an encapsulant (column 2, line 10-26) but fails to disclose the integrated circuit with a composition for containing metal ions, said composition comprising: a matrix material; a polymer which serves as an insoluble and an immobile phase in said matrix material and a chelating agent which is bonded to said insoluble and immobile phase.

Berger discloses an electronic device having an integrated circuit (semiconductor element 10, figure 1 and 2) with a composition, said composition comprising: a matrix

material (composition, column 4, line 34-35); a polymer which serves as an insoluble and an immobile phase in said matrix material (polyimide particles in the composition are immobile in said composition as those particles are stable in the composition); and a chelating agent (amines, described in detail on column 5, line 1 to column 8, line 33) which is bonded to said insoluble and immobile phase (as the composition exist as a single material in stable condition, which can be used as a coating material, column 4, line 35-40, all the elements thereof are bonded together), in order to have a protective coating to improve the functioning of the integrated circuit and to avoid degradation of electrical properties, with various physical and chemical properties as described on column 3, line 45 to column 4, line 14.

A person of ordinary skill in the art at the time of applicant's invention would have recognized the advantage of using the composition as protective coating, in order to improve the functioning of the integrated circuit and to avoid degradation of electrical properties.

Therefore, it would have been obvious to a person ordinary skill in the art at the time of applicant's invention to provide the integrated circuit of Raiser with claimed coating compositions, as taught by Berger, in order to improve the functioning of the integrated circuit and to avoid degradation of electrical properties.

**Regarding claim 5**, the modified package of Raiser further discloses said composition is a scratch coat (34, figure 1 and 2 of Berger) covering an active surface of said integrated circuit.

**Regarding claim 6**, the modified package of Raiser discloses all the features on the claimed invention including a package (see figure 1) to which said integrated circuit is bonded, as applied to claim 1 above.

**Regarding claim 7 and 8**, Raiser further discloses encapsulant (24, 38) deposited substantially an entire surface of said integrated circuit and between said integrated circuit and said package, see figure 1, but, fails to disclose said encapsulant is made of said compositions.

Berger discloses the coating material with said composition as a coating material for getting the desired property to avoid undesirable degradation of electrical properties of the semiconductor device.

A person of ordinary skill in the art would have recognized the advantage of providing coating material with the composition having chelating agent to have desired property to avoid undesirable degradation of electrical properties of the semiconductor device.

Further, it has been held to be within general skill of a worker in the art to select a known material on the basis of suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time of applicant's invention to provide the modified package of Raiser et al., with the encapsulant / underfill, as claimed in claim 7 and 8, having the composition with chelating agent to avoid undesirable degradation of electrical properties of the electronic device.

**Regarding claim 9**, the modified structure of Raiser et al., discloses all the features of claimed invention, as applied to claim 6 above, but fails to disclose said package comprises an organic package and wherein said composition is the said package. Raiser et al., does not disclose the details of package substrate 14 or the printed circuit board 22.

Burger, in an embodiment, figure 5, discloses a substrate made of resin, which is an organic material and the composition 160, is contained within the package.

As disclosed by Burger, the use of organic package is well known in the art, as economical and commercially available.

Further, it has been held to be within general skill of a worker in the art to select a known material on the basis of suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time of applicant's invention to provide the package of Raiser with the one of the circuit boards made of the composition, as taught by Berger, to have the desired



properties to avoid undesirable degradation of electrical properties of the semiconductor device. This meets the limitation.

**Regarding claim 10**, the combination of Raiser and Berger further discloses the device further comprises a printed circuit board (Raiser, 22, figure 1).

Claims 11-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Raiser and Berger as applied to claim 10 above, and further in view of Ikeda (US Patent No. 5,973,930).

**Regarding claim 11**, the combination of Raiser et al., and Berger, discloses all the features of the claimed invention, including the printed circuit board, but fails to disclose an underfill deposited between said package and said printed circuit board.

Ikeda et al., in figure 1, discloses a semiconductor device with underfill (7) between the package and the printed circuit board (9), to disperse the stresses caused by the difference in thermal expansion, (column 4, line 4-8).

A person of ordinary skill in the art would have recognized the advantage of providing underfill between the package and the circuit board to disperse the stresses caused by the difference in thermal expansion.

Therefore, it would have been obvious to a person of ordinary skill in the art to provide the combination of Raiser et al., and Berger, with the underfill deposited

between the package and the circuit board, in order to disperse the stresses caused by the difference in thermal expansion.

**Regarding claim 12**, the combination of Raiser, Berger and Ikeda discloses the composition is said printed circuit board, as applied to claim 9 above.

**Regarding claim 13**, the combination of Raiser et al., Berger and Ikeda et al., discloses the composition is a conformal coating which is deposited over said integrated circuit, said package and said printed circuit board, as applied to claims 4, 6 and 12 above.

#### **(10) Response to Argument**

Appellant's first argument for the rejection of claim 4 under 35 USC 102 (b) by Berger and under 35 USC 103 by Burger in view of Raiser, states that Berger alone does not show, and Raiser in view of Berger do not teach "a matrix material and a polymer which serves an insoluble and immobile particle phase in said matrix material" as claimed in claim 4.

This is not found to be persuasive.

Applicant's figure 1 and related description discloses element 110 (such a polymer, amendment filed to specification on January 4, 2005) as high molecular weight insoluble and immobile particle in a composition 100, (specification page 6, line 7-10). The combination of these two element (along with element 120) is shown as the

composition. The prior art of Burger (column 4, line 34-35) discloses a silicone containing polyimide composition. Polyimide are high molecular particles and the combination of these two element exist as a stable material as is used as coating material by Berger (element 34, figure 1). This shows that the polyimide particles are immobile and insoluble in the in the combination (composition) of silicone. Therefore, Berger meets the limitation.

(ii) Appellant's second argument for the rejection of claim 4 under 35 USC 102 (b) by Berger and under 35 USC 103 by Burger in view of Raiser, states that Berger alone does not show, and Raiser in view of Berger, do not teach "a chelating agent which is bonded to said insoluble and immobile phase" as claimed in claim 4.

This is not found to be persuasive.

Applicant's figure 1 and related description discloses element 110 (such a polymer, amendment filed to specification on January 4, 2005) as high molecular weight insoluble and immobile particle and element 120 as chelating agent in composition, and further states element 120 is permanently bonded to element 110. From this, in the absence of any specific detail, it is considered that the elements 110 and 120 are permanently bonded as a part of the composition. The prior art Burger discloses a silicone containing polyimide composition (column 4, line 34-35) including diamines (column 5, line 1 to column 8, line 33, diamines is considered as a chelating agent). All these elements forms coating material (element 34, figure 1). This shows that the elements are bonded permanently together. Therefore, Berger meets the limitation.

(iii) Appellant's third argument for the rejection of claim 9 under 35 USC 103 by Raiser in view of Burger, states that Raiser in view of Berger do not teach "wherein said package comprises an organic package and wherein said composition is said organic package" as claimed in claim 9.

This is not found to be persuasive.

The modified board of Raiser discloses the structure but is silent about the materials used in the package. Burger, as applied to claim 6, discloses said composition and further recites use of a substrate made of resin, an organic material (Burger column 10, line 28-50). That shows that the package is made of organic material. A person of ordinary skill in the art would have been motivated to use the organic structure as it is old and known in the art (as taught by Burger). Therefore, the modified board or Raiser discloses the organic package and meets the limitations as recited in the claim. It is to be noted that the limitation "wherein said composition is said organic package", as is unclear, is considered as "the said composition is part of the organic package."

(iv) Appellant's fourth argument for the rejection of claim 12 under 35 USC 103 by Raiser in view of Burger, states that Raiser in view of Berger and Ikeda do not teach "wherein said composition is said printed circuit board" as claimed in claim 12.

This is not found to be persuasive.

The modified board of Raiser discloses the structure including the printed circuit board as the part of the package and the composition as applied to claim 9 is part of the package. As Burger, discloses the coating applied to a structure. The coating also,

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considered to be applied to the portion of board, which meets the limitation. It is to be noted that the limitation "wherein said composition is said printed circuit board" as is unclear, is considered as "wherein said composition is a part of the printed circuit board".

**(11) Related Proceeding(s) Appendix**

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

Ishwar (I. B.) Patel

Primary Examiner

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